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AN ELECTRO-MECHANICAL GEAR SELECTOR

Cross-Reference to Related Applications

This application is related to United States Provisional Patent Application No. 60/537,243 filed, January 14, 2004 from which priority is
5 claimed, hereby incorporated by reference.

Technical Field

The present invention relates to a positive engagement clutch in general and to an electromagnetic actuated gear selector for automated manual transmissions in particular.

10 Background Art

Synchro-mesh devices are commonly used in vehicle gear boxes to simplify the operation of gear change so that this can be done by unskilled drivers without the occurrence of clashes and consequent damage. These devices usually incorporate a positive engagement
15 clutch such as a dog clutch and a friction clutch such as a cone clutch. These clutches were designed primarily for torque-interrupt shifting where the power was momentarily cut off during gear change. The gear and shaft were first brought to the same speed by the friction clutch and then a positive engagement was made through actuating the positive
20 engagement clutch. The synchro-mesh devices can be applied to sliding-mesh gear boxes but almost always used with constant-mesh boxes. In spite of their popularity, the synchro-mesh devices are not always trouble free. There are times when the jaws or teeth of one member of the positive engagement clutch are not aligned up well with
25 the groove on the mating member and the clutch will not engage. In addition, synchro-mesh devices are prone to wear and are not suitable for power-shifting.

With the introduction of automated manual transmissions (AMT), the desire for trouble free engagement and power-shifting becomes
30 increasingly strong. It almost becomes a necessity rather than a luxury. The present invention provides a compact gear selector, capable of